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KOSOVO NEW OPPORTUNITIES FOR AGRICULTURE PROGRAM

FRUIT AND VEGETABLE PROCESSING TECHNICAL ASSISTANCE

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FRUIT AND VEGETABLE PROCESSING ASSISTANCE

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CONTENTS

BACKGROUND

USAID supports economic growth in Kosovo through programs that strengthen and improve competitiveness of Kosovo agribusinesses, improve the business environment, and encourage local economic development. Accordingly, USAID/Kosovo has awarded Tetra Tech ARD the task order for the New Opportunities in Agriculture in Kosovo Program.

The goal of the program is to increase economic growth in Kosovo through expanded, environmentally sustainable production and sales of value-added agricultural products by enabling producers and processors to compete regionally and globally. The program has the following components:

1. Products and farmers linked with markets:
2. Agriculture products diversified and increased;
3. Food quality and safety improved;
4. Increased affordable and accessible credits;
5. Improved coordination with the agriculture sector.

Included in the crops recommended for development in Kosovo in USAID's Agricultural Strategy, the AgStrat report dated 2009, were fruits and vegetables. The potential for increased and improved commercial processing of 1) fruits into jams, marmalades and juices and 2) vegetables into acidified products such as pickles, sauces/ spreads, and mixed vegetables was identified. Accordingly, the Program has sought technical expertise to assist processors in the development of new and improved existing products via enhanced formulation, processing, equipment, facilities, and quality control procedures.

PURPOSE OF ASSIGNMENT

During the last few years, the number and capacities of local fruit and vegetable processing companies in Kosovo increased. Unfortunately they are facing difficulties in raw material supply, the proper use of equipment and the production of sustainable quality products. Fruit and vegetable processing on a commercial scale in Kosovo is a relatively new concept for the processors, except for ABI (Progress). ABI has some previous experience with commercial scale processing, while new processing companies in Kosovo such as MOEA, ASK Foods, EuroFood, MIB Trade, Supermix and Koral need additional support in field of fruit and vegetable processing techniques, the proper use of equipment and the development of new products to increase their competitiveness.

The objectives of this assignment were to:

- Identify main constraints within the existing processing facilities.
- Support processing companies on-the-job, in product formulation specifically for jams, marmalades and pickled vegetables.
- Present/demonstrate on-the-job best practices of food processing technologies within the targeted companies – especially in relation to different types of recipes and formations.
- Develop infrastructure investment plan for increase of production capacity and quality improvement.
- Development of list for processing equipment required and equipment specification to improve current situation and assist companies in identification of vendors for required equipment for processing.
- Identify human resource capacity building needs for each processing company.
- Assess food laboratory and QC capacities in the processing plant level.

This assignment will provide NOA with an initial assessment of each processor's technical needs, provide initial information to address those of highest priority, and provide recommendations to be incorporated into NOA's planning for the next phase of the project as appropriate.

EXECUTIVE SUMMARY

This report will provide an initial assessment of each fruit and vegetable processor's technical needs, provide information to address those needs per processor that is of highest priority, and provide recommendations to be incorporated into NOA planning for the next phase of the project, as appropriate.

This report identifies technical issues and also supplies recommendations related to the implementation of routine food safety and quality protocols to the NOA program after conducting field visits including meeting with the management of facilities as well as touring existing facilities. Documentation of formulations, processing conditions, control procedures and analytical methods were not shared or reviewed during this assignment, and thus are not reported.

Processors differ in several areas including stage of business development, marketing strategy, product design, processing equipment, size of facility, and production capacity. The processors visited in Kosovo differed in technical issues or needs in general with the exception of a common issue: undesirable enzymatic browning in acidified mushrooms among several of the processors. In order to respect the confidentiality of the technical issues of each processor, individual reports were made to the representatives of the individual companies.

The fruit and vegetable processing industry in Kosovo would greatly benefit from the following: 1) Implement current NOA training in Good Manufacturing Practices and 2) Conduct technical reviews of all heat processes by a thermal processing expert. Both of these general recommendations for all processors would ensure the safety of the product, maximize quality (prevent excessive heat processing), and potentially reduce the costs of energy and product failures. The implementation of HACCP for each product should also occur. These would also assist with the approval of exporting products into the EU or USA.

It is to be noted that the technical skills and the knowledge of processing line managers/ food technologists vary widely from processor to processor in Kosovo. Assistance in identifying an adequately trained technologist would greatly benefit the industry just as training in and hands-on application of food technology areas are important for the entire sector to grow.

Processor equipment varies in age and flexibility in producing additional types of products, and production capacity. Some processors appear to be best suited for domestic or regional markets, as others could be positioned for export to EU or USA.

Suggestions for the generation of a long-term strategy for continued development of the fruit and vegetable processing industry in Kosovo were also presented.

FIELD ACTIVITIES TO ACHIEVE PURPOSES

Meetings with Mark Wood, Chief of Party, Michael Kimes, Chief Technical Officer, and Reshat Ajvazaj, Post-Harvest/ Certification Specialist, Tetra Tech ARD, USAID Contractor for New Opportunities for Agriculture (NOA) were held on July 16, 2012, at NOA offices in Pristina. Topics were discussed were project objectives, overall agribusiness situation, current products and processing conditions of individual processing companies in Kosovo. During Jul 16 – 26 field visits were made to **ABI (Progress)** in Prizren, **Ask Foods** in Gjilan, **Mib Trade** in Pristina, **Koral** in Pristina, and **MOEA** in the Gjilan area. A detailed itinerary of field visits is in Annex I.

Each of the field visits included a meeting with management, a tour of the existing facility, identification of technical issues, and a review of recommendations that were presented to the management all of which related to the implementation of routine food quality and safety procedures. The actual viewing of the product being processed occurred in two of the visits. Documentation of formulations, processing conditions, control procedures and analytical methods was not shared or reviewed. Findings and recommendations within this report were limited to a very brief one to two hour visit – a "snapshot" in time. As a result, my recommendations must be assessed by NOA staff who have a longer term association/ experience with the processors.

TASK FINDINGS AND RECOMMENDATIONS

The following tasks, findings, and recommendations were derived from the Scope of Work provided by CNFA/USAID's Farmer-to-Farmer Program and with conversations with NOA staff working on the project.

Task #1: Identify main constraints within the existing processing facilities.

	Findings	**Recommendation**	**Impact**
1	Most processors could not document when the thermal process for each product was determined, how and by whom.	Process authority needs to reevaluate heat process/ determine new heat process with new equipment or existing equipment when installed in new facility currently under construction. Process authority needs to review all other heat processes (low acid foods first) for all products especially if process was determined prior to 2000.	-Safety -Quality Compliance with Regulations -Cost
2	Uncertain if processors had implemented or were in the process of implementing GMP and HACCP.	NOA might consider evidence or documentation of implementation for approval of future funding for equipment, assistance.	-Safety -Quality
3	Only one of the processors had a trained/ technically competent food technologist on staff.	NOA might consider establishing linkages with regional universities and employment agencies to assist the processors in identifying available food technologists for employment.	-Safety -Quality
4	Assistance was needed in electronic filing of thermal process forms with US FDA for importing products into the US.	Knowledge and understanding of the critical factor in the thermal/ heat process was lacking. Training could be provided as part of a training course on thermal processing. These factors need to reflect the thermal process established by a process authority (refer to 1.)	-Compliance with regulations -Export
5	One of the processors was currently using an older building for part of the processing / facility not sanitary/ cleanable/ potential for physical, chemical and microbial contamination of product prior to or during processing.	Processor needs to relocate all processing to new or upgraded facility with adequate sanitary design.	-Safety -Quality

Task #2: Support processing companies on-the-job, in product formulation specifically for jams, marmalades and pickled vegetables.

No assistance was requested by processors in product formulations.

Task #3: Present/demonstrate on-the-job best practices of food processing technologies within the targeted companies

Findings	Recommendation	Impact
1. Enzymatic browning of mushrooms prior to heat process	1. Run experiments with specific treatment options	Quality
2. Bottom + side seam bulges and failures with green beans in metal cans.	2. Processor needs to check lid applicator/ closing device via seam inspection (lid with can wall) as frequently as required (minimum of once per hour). Visual inspection of filled cans before lid application to remove any beans on seal area.	Safety

Task #4: Develop infrastructure investment plan for increase of production capacity and quality improvement.

This was not possible given the short time with each processor.

Task #5: Development of list for processing equipment required and equipment specification to improve current situation and assist companies in identification of vendors for required equipment for processing.

This was not conducted. The processor needs to identify the type of equipment based on the product, process flow, existing equipment, and production capacity requirements. A consultant might potentially assist with identifying the final type of equipment required.

Task #6: Identify human resource capacity building needs for each processing company

The major human resource capacity building area is current knowledge of food technology and food processing including thermal processing. The personnel managing the processing in some of the companies were using procedures established years ago and appeared to not have the scientific training to deal with complex problem solving of technical issues. In other situations there did not appear to be or there wasn't a trained food technologist on staff. NOA might consider establishing linkages with regional universities and employment agencies to assist the processors in identifying available food technologists for employment.

Task #7: Assess food laboratory and QC capacities in the processing plant level.

In general, the Quality Control laboratories and equipment viewed were rudimentary and dated. Each processor needs to determine the critical process control factors (pH, temperature, time) and product attributes for each product which must be measure and recorded. Then select method and equipment that best correlates with the "standard" method used by regulatory agency/ lab whose results are used to determine compliance with regulations. Training and assistance by a volunteer consultant is recommended and should be the total assignment focus.

CONCLUSIONS AND RECOMMENDATIONS FOR FUTURE ACTIVITY

The fruit and vegetable processing industry in Kosovo would greatly benefit from the following:

1) Implement current NOA training in Good Manufacturing and
2) Conduct technical reviews of all heat processes by a thermal processing expert. These two recommendations conducted in tandem would ensure the safety of the product, maximize quality (prevent excessive heat processing), and potentially reduce the costs of energy and product failures. Implementation of HACCP for each product should also occur. These plans would assist with the approval of exporting products into the EU or USA.

Technical skills and knowledge of processing line managers/ food technologists vary widely from processor to processor. Assistance in identifying an adequately trained technologist would greatly benefit the industry, as would the training in, and the hands-on application of food technology.

It is important to note that processor equipment varies in age, flexibility in producing additional types of products, and in production capacity. Some processors appear to be best suited for domestic or regional markets and others could be positioned for export to EU or USA. There is no one set of characteristics for processors to be in Kosovo.

Specific recommendations were developed for each five individual processors to address technical issues identified by the processor or by me during the assignment. These should remain confidential between NOA and the processor, as to not harm their businesses.

Potential Volunteer Consultant Opportunities/ Projects recommended are:

1. Educational Programs and Hands-On Application
    a. Introduction/ Overview of Thermal/ Heat Processing including Critical Factors
    b. Electronic and Paper Filing of FDA process forms (1 day)
    c. Quality Control Laboratories – Management and selection of analyses, criteria to measure
    d. Cleaning and sanitizing agents/ program with supplier representatives – if not done already
    e. New technologies, non-thermal processes for more fresh-like product quality (in future)
2. Technical Assignments
    a. New product development based on market needs/assessment
    b. Processing plant management: work force, SOPs, planning

Final equipment selection and sourcing is an appropriate area for a volunteer consultant. Identifying alternative types of equipment might be an appropriate volunteer assignment. NOA may need to contract with regional experts who are aware of regional suppliers with knowledge of cost and quality, or perhaps develop that expertise internally.

ANNEXES

Annex 1: Summary of Activities

Annex II: List of Contacts

Annex III: Better Process Control Schools, USA

ANNEX I: SUMMARY OF ACTIVITIES

7/15/12	Arrived in Pristina.
7/16	Met with Mark Wood, Michael Kimes, and Reshat Ajvazaj of Tetra Tech ARD/ NOA. Discussed project objectives, overall agribusiness situation, current products and processing conditions of individual processing companies in Kosovo. Visited **MIB Trade** in Pristina.
7/17	Visited **ABI (Progress)** in Prizren.
7/18	Visited **Ask Foods** in Gjilan.
7/19	Visited **MOEA** in the Gjilan area.
7/20	Conducted scientific literature searches using databases accessed through the University of Minnesota Library via the Internet. Journal articles related to the technical issues of interest to the processors were downloaded and compiled. Those not available on line were requested via Interlibrary Loan for electronic delivery.
7/21	Formatted and began writing project report.
7/22	Prepared initial drafts of reports for each processor addressing the high priority technical issues they had identified.
7/23	Visited **Koral** in Pristina.
7/24	Visited **ABI (Progress)** to discuss recommendations.
7/25	Visited Ask Foods to assistance with electronic filing of US FDA Food Process From and discuss recommendations.
7/26	Visited Koral to discuss recommendations.
7/27	Debriefed with staff: recommendations and future strategies.
7/28	Departed for USA.

ANNEX II: LIST OF CONTACTS

Processor	Name	Phone	E-mail Address
ABI (Progress)	Irfan Fusha (Owner)	+381 (0) 29 242 433 +377 (0) 44 113 430 (M)	info@abielif19.com
Ask Foods	Erton Namoni (General Manager)	+381 280 321 544 +377 44 502 104 (M)	erton@ask-foods.com
Koral	Nasser Rusinovci Executive Director	+381 38 541 914 +381 38 541 912	solekosova@hotmail.com
Mibfood	(business card did not have name printed)	+386 49 848 888 +377 44 416 416 (M)	info@mibfood.com
MOEA	Bunjamin Alili (Food Technologist)	+377 44 250 509 (M)	benjamin.alili@moea-ks.com

ANNEX III:
Better Process Control Schools, USA

The Better Process Control Schools (BPCS) are examples of courses designed for the food processing industry related to thermal processing. BPCS certify supervisors of thermal processing systems, acidification, and container closure evaluation programs for low-acid and acidified canned foods. Each processor of low-acid or acidified foods in the USA must operate with a certified supervisor on hand at all times during processing.

The 2011-12 Schedule of BPCS can be found at:
http://www.gmaonline.org/file-manager/Events/Bro_BPCS-011411.pdf

Information regarding an on-line BPCS course offered by the University of California-Davis can be found at:
http://www.fruitandvegetable.ucdavis.edu/Cooperative_Extension_Short_Courses/Better_Process_Control_School_Online/

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